October 19, 2021

VIA ECFS

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
45 L Street, NE
Washington, DC 20554

Re: ***Expanding Flexible Use of the 12.2-12.7 GHz Band*, WT Docket No. 20-443**

Dear Ms. Dortch,

The record shows that the Commission has a unique opportunity to craft an enormous economic and social "win-win" for American consumers while enhancing the nation's competitiveness. These kinds of opportunities are rare. The potential to bring enhanced 5G services to hundreds of millions of Americans while still allowing for the possible emergence of satellite-based internet service offers a singular occasion for national leadership.

We and other commenters have previously identified a long series of inaccurate and misleading assertions made in this proceeding by SpaceX and certain other opponents of reform and modernization of the 12 GHz band.[1] Among other things, detailed filings have corrected mischaracterizations and factual errors in SpaceX's purported response to the work of RKF Engineering, whose exhaustive and unrefuted study demonstrating the feasibility of satellite and terrestrial 5G coexistence remains the only meaningful technical analysis in the record.[2] We now turn our attention to addressing false claims made by SpaceX and others about various legal and procedural aspects of this proceeding.[3]

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[1] *See* Comments of RS Access, LLC, WT Docket No. 20-443 *et al.* (filed May 7, 2021) ("RS Access Comments"); Reply Comments of RS Access, LLC, WT Docket No. 20-443 *et al.* (filed July 7, 2021) ("RS Access Comments"); Letter from David Marshack, RKF Engineering, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 20-443 (Aug. 9, 2021) ("RKF Letter").

[2] *See, e.g.*, RS Access Comments at Appendix A ("RKF NGSO Study"); Letter from Pantelis Michalopoulos, Counsel to DISH, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 20-443 (filed Aug. 29, 2021); *see also* RKF Letter at 2-12.

[3] *See, e.g.*, Letter from David Goldman, SpaceX, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 20-443, at 2 (filed Oct. 13, 2021) ("SpaceX October 13 Letter") (asserting, without citation, that "the only action the Commission could take" in this rulemaking proceeding would

In a last-ditch argument to forestall 12 GHz reform, SpaceX has suggested that the Commission is precluded from enabling 5G in the band because SpaceX is seeking a nearly $1 billion subsidy from Phase I of the Commission's Rural Digital Opportunity Fund.[4] But the Commission has not made any binding commitment to give SpaceX RDOF subsidies,[5] and SpaceX's quest for a windfall of taxpayer funds in no way constrains the Commission from modernizing the band. Finally, SpaceX's ability to satisfy its RDOF commitments is dubious, no matter the outcome of the 12 GHz proceeding.[6]

SpaceX and other commenters also have an inaccurate understanding of how the Commission initiated this proceeding and the requirements of the Administrative Procedure Act ("APA").[7] The Commission has scrupulously followed the APA in this proceeding, and while we address SpaceX's various legal and procedural "theories" in more detail below, the Commission should not be misled or distracted by disingenuous and self-interested attempts to concoct procedural roadblocks to socially beneficial reform.

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be to reverse course on the proposed reform of 12 GHz terrestrial service rules and instead eliminate licensed terrestrial services from the band). As in so many of its other submissions, SpaceX's rhetoric regarding purported procedural faults in this proceeding outstrips any legal or factual foundation for the claim. *Id.* (claiming, without citation, that the Commission would violate unspecified administrative procedures if it were to consider the "bizarre" claim that terrestrial services can support intensive broadband deployment because doing so would aceede to the "desperate tactics" of commenters who are "forc[ing] the Commission to make decisions that will harm Americans.").

[4] *See* Letter from David Goldman, SpaceX, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 20-443 *et al.*, Attachment, at 3 (filed Aug. 2, 2021); *see also* Reply Comments of Space Exploration Holdings, WT Docket No. 20-443, at 22 (filed July 7, 2021) ("SpaceX Reply Comments").

[5] As the FCC has consistently explained, winners in funding auctions are not automatically entitled to the funds. *See Connect America Fund et al.*, Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663 ¶ 221 (2011).

[6] *See, e.g.*, RS Access Comments at 25-26 (describing SpaceX's inherent capacity limitations); Letter from Amy Mehlman, Viasat, to Marlene H. Dortch, Secretary, FCC, AU Docket No. 20-34, at 2 (filed Apr. 5, 2021) ("SpaceX cannot satisfy both the Nco = 1 commitment [limiting SpaceX to one co-frequency satellite beam to a terminal] … and its RDOF service obligations.").

[7] 5 U.S.C. § 553; *see also MCI Cellular Tel. Co. v. FCC,* 738 F.2d 1322, 1333 (D.C. Cir. 1984) ("Where a highly technical question is involved, courts necessarily must show considerable deference to an agency's expertise.") (cleaned up).

The Commission has the legal authority to do what the science, the economics, and the social benefits demand.[8] We urge the Commission to act now: the 12 GHz band is the only spectrum readily available for commercial use with the superior combination of performance characteristics and bandwidth to support significant nationwide deployment in 5G wireless broadband networks. The 12 GHz band has no federal encumbrances, and it offers the Commission and Administration a unique opportunity for a major victory in accelerating mobile broadband in the U.S.

The 12 GHz NPRM provided commenters with sufficient notice to address all technical, regulatory, legal, and policy issues implicated by introducing 5G into the 12 GHz band.
SpaceX and others wrongly claim that the *12 GHz NPRM*[9] fails to provide sufficient notice under the Administrative Procedure Act ("APA") by not detailing with exacting certitude the rules the Commission may ultimately adopt.[10] The law does not require the Commission to provide that level of precision as to a rulemaking's eventual outcome, and of course, any such detail would be impracticable in a technical proceeding such as this one. The APA merely requires the Commission to provide "the terms or substance of the proposed rule *or a description of the subjects and issues involved*."[11] In interpreting this disjunctive statutory requirement, courts have explained that "[t]he purpose of the notice-and-comment procedure is both 'to allow the agency to benefit from the experience and input of the parties who file comments . . . and to see to it that the agency maintains a flexible and open-minded attitude towards its own rules.'"[12]

The *12 GHz NPRM* provides fair notice of 5G rules for the band. The "logical outgrowth" doctrine recognizes that an agency will often decide to adopt rules that differ from the initial proposals: the point of a notice-and-comment proceeding is for the agency to solicit feedback on its proposals and amend them as necessary. A requirement that binds the agency in all respects to its notice of proposed rulemaking would defeat the APA's purpose. Instead, as the Supreme

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[8] *See* 47 U.S.C. § 303 (giving the FCC broad spectrum rulemaking authority bounded by the "public convenience, interest, or necessity").

[9] *Expanding Flexible Use of the 12.2-12.7 GHz Band et al.*, Notice of Proposed Rulemaking, 36 FCC Rcd 606 (2021) ("*12 GHz NPRM*").

[10] Letter from David Goldman, SpaceX, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 20-443, at 2 (filed Oct. 18, 2021) ("SpaceX October 18 Letter"); Reply Comments of AT&T Services, Inc., WT Docket No. 20-443 *et al.*, at 34-35 (filed July 7, 2021) ("AT&T Reply Comments"); Reply Comments of Microsoft Corporation, WT Docket No. 20-443 and GN Docket No. 17-183, at 3-7 (filed July 7, 2021) ("Microsoft Reply Comments").

[11] 5 U.S.C. § 553(b)(3).

[12] *Chocolate Mfrs. Ass'n of United States v. Block*, 755 F.2d 1098, 1103 (4th Cir. 1985) (quoting *Nat'l Tour Brokers Ass'n v. United States*, 591 F.2d 896, 902 (D.C. Cir. 1978)).

Court has made clear, "the object, in short, is one of fair notice"[13]—whether the agency's final decision was one which interested parties should have anticipated as a possibility and submitted comments on. If so, then the agency provided sufficient notice, and interested parties had a chance to raise their objections.[14] A final rule fails the logical outgrowth test only if the parties "would have had to divine the agency's unspoken thoughts" to meaningfully respond to the issues implicated by the final rule.[15]

The Commission has followed the same approach of moving to progressively more specific conclusions in other proceedings.[16] In the C-band proceeding, for instance, the Commission faced a range of policy options; therefore, the initial notice of proposed rulemaking included essentially no proposed rules, aside from a few standard Part 27 rule additions.[17] Furthermore, the notice of proposed rulemaking did not determine how much spectrum would be repurposed, and the Commission decided to repurpose 300 megahertz of spectrum based on an *ex parte* letter filed only after all comment deadlines had passed.[18] In any event, nothing prevents the Commission from issuing a public notice to supplement the record with more technical commentary, as the agency has done in many different proceedings in the past.[19]

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[13] *Long Island Care at Home, Ltd. v. Coke*, 551 U.S. 158, 174 (2007); *see also Agape Church Inc. v. FCC*, 738 F.3d 397 (D.C. Cir. 2013).

[14] *Clean Air Council v. Pruitt*, 862 F.3d 1, 10 (D.C. Cir. 2017) (noting that "this issue turns on whether industry groups had an opportunity to raise their objections during the comment period, which in turn depends on whether the NPRM provided adequate notice of the final . . . rule").

[15] *Id.* (citing *CSX Transportation Inc. v. Surface Transp. Bd.*, 584 F.3d 1076, 1080 (D.C. Cir. 2009)).

[16] *12 GHz NPRM* ¶ 2 ("We seek comment on *whether* the Commission could add a new or expanded terrestrial Mobile allocation in the 12 GHz band without causing harmful interference to incumbent licensees. *Assuming we could do so*, we seek comment on whether that action would promote or hinder the delivery of next-generation services in the 12 GHz band given the existing and emergent services offered by incumbent licensees.") (emphasis added).

[17] *Expanding Flexible Use of the 3.7 to 4.2 GHz Band et al.*, Order and Notice of Proposed Rulemaking, 33 FCC Rcd 6915, Appendix A (2018).

[18] *See* Letter from Bill Tolpegin, Chief Executive Officer, C-Band Alliance, to Marlene H. Dortch, Secretary, FCC, GN Docket No. 18-122 (filed Oct. 28, 2019); *Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, Report and Order and Order of Proposed Modification, 35 FCC Rcd 2343 ¶ 31 (2020).

[19] *See, e.g., International Bureau and Wireless Telecommunications Bureau Seek Focused Additional Comment in 3.7–4.2 GHz Band Proceeding*, Public Notice, 34 FCC Rcd 2904 (2019) (seeking targeted comment on the Commission's legal authority to adopt certain repurposing proposals); *Wireless Telecommunications Bureau, International Bureau, Office of Engineering*

For similar reasons, SpaceX is wrong to say that neither the NPRM nor "the subsequent record provide sufficient notice and comment for the Commission to move directly to an order."[20] This argument conceives of a rulemaking proceeding as a process in which a far-seeing government authority devises precise technical rules before analyzing the facts at hand.[21] In reality, engineering studies drive the service rules the Commission adopts, not the other way around.[22]

The RKF NGSO Study is a robust technical analysis on which the Commission can rely. SpaceX criticizes RKF for not offering to "make the software underlying its simulations available for review by others."[23] Another commenter claims that the Commission cannot rely on the RKF NGSO Study because "RKF has elected to provide only curated conclusions about its study, rather than providing the study itself, and therefore the analysis cannot lawfully be relied upon by the FCC."[24] These claims are meritless. To begin, no reasonable observer could

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and Technology, and Office of Economics and Analytics Seek Focused Additional Comment in 3.7–4.2 GHz Band Proceeding, Public Notice, 34 FCC Rcd 6208 (2019) (seeking targeted comment on additional transition proposals).

[20] SpaceX October 18 Letter at 2. Likewise, Microsoft is incorrect to say that the Commission could not "engage in reasoned decision making" because specific service rules have not yet been proposed. *See* Microsoft Reply Comments at 3.

[21] Microsoft similarly argues that "12 GHz incumbents and other stakeholders have no way of conducting studies to assess the risk of harmful interference." Microsoft Reply Comments at 3. But the existence of the RKF NGSO Study disproves Microsoft's claim. Microsoft had access to precisely the same 3GPP standards for 5G NR deployment that RKF used and cited throughout its study. Those standards provide ready access to every 5G NR operating parameter, including the power levels and antenna requirements that Microsoft labels as a mystery. Even if opponents of reform never chose to address power limits or other operating parameters, a party's decision to leave issues unexplored would not bar the Commission from acting based on the record before it. *See, e.g., Amendment of the Commission's Rules Governing Hearing Aid-Compatible Mobile Handsets; Petition of American National Standards Institute Accredited Standards Committee C63 (EMC) ANSI ASC C63®*, First Report and Order, 23 FCC Rcd 3406 (2008) ("Given the weight of the record, especially the fact that no commenter submitted any specific proposals for new standards or rules, we determine not to impose any additional benchmarks . . . .").

[22] *See, e.g., See Unlicensed Use of the 6 GHz Band; Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz*, Report and Order and Further Notice of Proposed Rulemaking, 35 FCC Rcd 3852 (2020) ("*6 GHz Order*").

[23] Letter from David Goldman, SpaceX, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 20-443, at 2 (filed Sept. 27, 2021).

[24] AT&T Reply Comments at 19.

agree with an assertion that RKF provided "only curated conclusions."[25] The 62-page RKF NGSO Study includes an exacting description of the engineering model's design, methodology, mathematical equations, geographic base-station siting distributions, data sources, operational parameters, assumptions, sensitivities, and results.[26]

The D.C. Circuit has repeatedly rejected arguments like those made by RKF's critics, emphasizing that an agency may reasonably "rely on published studies" without having to independently analyze the "enormous volume of raw data" often involved in these studies.[27] In *Coalition of Battery Recyclers Ass'n v. EPA*, the D.C. Circuit rejected arguments that the EPA acted arbitrarily and capriciously when it relied on a study "without first obtaining and making public the underlying data for the study."[28] Similarly, in *American Trucking Associations v. EPA*, the court found that "requiring agencies to obtain and publicize the data underlying all studies on which they rely would be impractical and unnecessary."[29]

All the law requires is that "studies upon which an agency relies in promulgating a rule must be made available during the rulemaking" with sufficient granularity to allow for "meaningful commentary" and a "genuine interchange" of views.[30] The RKF NGSO Study has met and exceeded this threshold requirement. Tellingly, SpaceX, OneWeb, and others have apparently found enough meaningful information in the RKF NGSO Study to assess its findings and offer substantive (though misguided) critiques. These attempted rebuttals refute claims that the RKF NGSO Study left commenters in the dark about its methodology and assumptions.

FCC action on terrestrial licensees' substantial service showings is not a prerequisite to a report and order. Just as SpaceX's APA arguments fail, so too does the company's claim that the the only action the FCC can take in this proceeding is to eliminate terrestrial services from

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[25] *Id.* at 20.

[26] AT&T does not explain how the RKF NGSO Study—which is far more extensive and granular than other studies on which the Commission has relied —provides insufficient information to assess its validity. For example, the 6 GHz band's report and order relied extensively on a 20-page slide deck from CableLabs. *See 6 GHz Order* ¶ 112; Letter from Rob Alderfer, Vice President of Technology Policy, CableLabs, to Marlene H. Dortch, Secretary, FCC, ET Docket No. 18-295 and GN Docket No. 17-183 (filed Dec. 20, 2019).

[27] *Am. Trucking Ass'n v. EPA*, 283 F.3d 355, 372 (D.C. Cir. 2002).

[28] 604 F.3d 613, 622-23 (D.C. Cir. 2010).

[29] 283 F.3d at 372.

[30] *Am. Radio Relay League, Inc. v. FCC*, 524 F.3d 227, 236-37 (D.C. Cir. 2008).

the band.[31] First, SpaceX's request is mooted by RS Access's substantial service showing.[32] Neither SpaceX, nor any other party has challenged the merits of RS Access's showing of deployment and service delivery in the 12 GHz band, perhaps because RS Access has documented deployments and operations far in excess of what is minimally sufficient to warrant renewal.[33] Second, SpaceX's position—the Commission should take no action pending its review of the substantial service showings—assumes the Commission cannot handle more than one task at a time.[34] But, of course, it can.[35] Third, the Commission can act incrementally, too. For example, the Commission has added mobile allocations to a band before adopting service or licensing rules, such as in the AWS-1 and AWS-4 bands.[36]

Opponents' newfound interest in MVDDS substantial service showings is irrelevant in any case. That inquiry does not bear on *whether* introducing flexible use rights into the band is technically feasible or in the public interest. For example, one of the proceeding's purposes is to determine

[31] *See, e.g.*, SpaceX October 13 Letter at 2; SpaceX Reply Comments at 27; *see also* AT&T Reply Comments at 36.

[32] 47 C.F.R. § 101.1413(b) ("The substantial service requirement is defined as a service that is sound, favorable, and substantially above a level of mediocre service which might minimally warrant renewal."); *Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range et al.*, Memorandum Opinion and Order and Second Report and Order, 17 FCC Rcd 9614 ¶ 177 (2002).

[33] Substantial Service Showing of RS Access, LLC, ULS File No. 0008742312, Substantial Service Showing Supplement at 1-2 (filed July 26, 2019).

[34] SpaceX Reply Comments at 27.

[35] *See, e.g., Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, Including Third Generation Wireless Systems,* Memorandum Opinion and Order, 16 FCC Rcd 7636 (2001) (concluding that adopting a notice of proposed rulemaking to consider the possibility of introducing new advanced mobile and fixed services in 2500-2690 MHz band, which was then occupied by MDS and ITFS licensees, did not require Commission to defer action on MDS and ITFS two-way applications).

[36] *Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems,* Second Report and Order, 17 FCC Rcd 23193 (2002); *Fixed and Mobile Services in the Mobile Satellite Service Bands at 1525-1559 MHz and 1626.5- 1660.5 MHz, 1610-1626.5 MHz and 2483.5-2500 MHz, and 2000-2020 MHz and 2180-2200 MHz,* Report and Order, 26 FCC Rcd 5710 (2011).

the feasibility of coexistence between 5G and NGSO FSS and DBS operations.[37] And yet, SpaceX urges no further action in this proceeding pending review of routine regulatory submissions from licensees. Pressing pause on the exploration of new spectrum for wireless broadband service would serve only to delay the ultimate resolution of this proceeding with no concomitant benefit.

The Commission need not unwind the RDOF auction to introduce flexible use rights in the 12 GHz band. SpaceX claims that introducing 5G into the 12 GHz band would require the Commission to unwind the RDOF auction.[38] Virtually none of the RDOF winners use the 12 GHz band for service. And SpaceX's ability to satisfy its RDOF commitments is highly questionable, no matter the outcome of the 12 GHz proceeding.[39]

SpaceX's implicit claim of reliance on the RDOF bidding results is unfounded. As the Commission has repeatedly explained, reverse auction winners have no "entitlement or expectation that [USF funding recipients] will receive any particular level of support or even any support at all."[40] The Tenth Circuit has confirmed that "there is no statutory provision or Commission rule that provides companies with a vested right to continued receipt of support at current levels."[41] FCC funding applicants know full well that the Commission may change its

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[37] *See 12 GHz NPRM* ¶ 20 ("First, we seek comment on whether we can increase opportunities for shared use of the band while protecting incumbents from harmful interference.").

[38] SpaceX Reply Comments at 22.

[39] *See, e.g., Starlink RDOF Assessment Final Report* (Feb. 8, 2021), Letter from Fiber Broadband Association & NTCA to Acting Chairwoman Rosenworcel *et al.*, WC Docket No. 19-126 and AU Docket No. 20-34, at 6 (filed Feb. 8, 2021) ("By 2030, the capacity required is 22.0 – 28.6 Mbps per subscriber[.] Starlink's 6-year build period is likely to be concluded by 2028; we estimate that capacity required in 2028 to be between 15.3 and 20.8 Mbps[.] This average peak demand accounts for users not online in the busy hour[.]"); Letter from Amy R. Mehlman and Jarrett S. Taubman, Viasat, to Marlene H. Dortch, Secretary, FCC, WT Docket No. WT Docket No. 20-443 *et al*., at 2 (filed Apr. 5, 2021) ("At these numerous RDOF locations, *SpaceX cannot satisfy both the Nco=1 commitment underlying its pending modification application, and its RDOF service obligations. These problem locations exist in 66% of the states in which SpaceX is a provisional winner*.") (emphasis in original).

[40] *Connect America Fund et al.*, Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663 ¶ 221 (2011).

[41] *In re FCC 11-161*, 753 F.3d 1015, 1070 (10th Cr. 2014) (quoting *Connect America Fund et al.*, Report and Order and Further Notice of Proposed Rulemaking, 26 FCC Rcd 17663 ¶ 293 (2011)).

other service rules or policies in the future.[42] Nor do FCC funding applicants have any legitimate, investment-backed expectations in the status quo.[43] These unambiguous conclusions are all the more emphatic here because every Ku-band NGSO FSS operator received express notice from the FCC that the agency may introduce 5G wireless broadband services in the 12 GHz band.[44] Therefore, any reliance interest that SpaceX or others purport to have had simply is not reasonable.

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In sum, commenters raise no procedural or legal hurdles that prevent the Commission from authorizing 5G deployment in the 12 GHz band. RS Access, New America's Open Technology Institute, Public Knowledge, INCOMPAS, CCIA, T-Mobile, DISH, and numerous other stakeholders have produced rigorous engineering and economic analyses, along with sound legal,

[42] *See United States v. Storer Broad. Co.*, 351 U.S. 192 (1956) (upholding dismissal of pending application for new station due to rule change limiting the number of licenses that could be held by one owner); *see also Chadmoore Communications, Inc. v. FCC*, 113 F.3d 235, 240-41 (D.C. Cir. 1997) ("In this case the Commission's action did not increase [the applicant's] liability for past conduct or impose new duties with respect to completed transactions. Nor could it have impaired a right possessed by [the applicant] because none vested on the filing of its application.").

[43] *See Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Second Order on Reconsideration, 30 FCC Rcd 6746, 6784 ¶ 82 n.309 (2015) ("[M]ere applicants have minimal equities in favor of preservation [in the incentive auction repacking process] considering that they have not acted in reliance on Commission grants, have not made any investment in constructing their requested facilities, and have not begun operating the proposed facilities to provide service to viewers.").

[44] The Commission most recently reminded NGSO operators that the agency may seek to expand the terrestrial capabilities in the 12 GHz band when it granted SpaceX's third modification. *See, e.g., Space Exploration Holdings, LLC Request for Modification of the Authorization for the SpaceX NGSO Satellite System*, Order and Authorization and Order on Reconsideration, IBFS File No. SAT-MOD-20200417-00037, FCC 21-48, ¶ 50 (rel. Apr. 27, 2021) ("As with prior grants, we condition this grant, subject to any modification necessary to bring it into conformance with future actions in Commission rulemakings, including but not limited to the 12 GHz proceeding, which is expressly referenced in the ordering clauses below. Therefore, SpaceX proceeds at its own risk."). These conditions exist in other 12 GHz NGSO authorizations. *See* Comments of DISH Network Corporation, WT Docket No. 20-443, at 58-59 & n.202 (filed May 7, 2021) (identifying similar conditions in grants for Space Norway, Kepler, and other NGSO operators in the 12 GHz band); *see also* RS Access Comments at n.10.

procedural, and policy reasons for bringing the twenty-year-old rules governing terrestrial operations in the 12 GHz band into the broadband era.

Please contact me with any questions regarding this submission.

Sincerely,

/s/ V. Noah Campbell

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